REMARKS

The specification is amended to correct typographical errors. Support for such corrections can be found, for example, on page 11, line 23, page 12, line 2, and FIG. 3C.

All the amendments and new claims are supported by the original specification and claims as originally filed. Applicant respectfully submits that no new matter is added.

The undersigned wishes to thank the Examiner for his time and courtesy during the telephonic interview that took place on April 12, 2001. The following remarks are intended to constitute a proper recordation of such interview in accordance with MPEP §713.04, and also to provide a full response to the Office Action mailed on October 27, 2000, in the prior application before the present CPA was filed.

The discussion focused primarily on the Takayama et al., Chapelon et al. and Vona et al. references. The undersigned argued that none of the references, alone or in combination, suggested the deliberate use of sonoluminescence in an intracorporeal context, and proposed advancing prosecution by recasting claims 1, 4-12, 14, 15, 17, 20-30, 32-44, 47-50, 52, and 53 in method form. This is accomplished in the foregoing amendment. New claims 60-63 are method claims ultimately depending from amended claim 1, and support for these new claims can be found through the specification and claims as originally filed.

Claim 54 is also amended to recite that the claimed device includes a sonoluminescent light module disposed within an elongated member, and that the position of the light module is adjustable relative to the member through a connection to a proximal region of the device. We submit that this claim, as amended, is patentable over the cited art. Support for the amendment to claim 54 can be found throughout the specification and at least on page 18, lines 15-25.

CONCLUSION

New claims 60-63 are added. Claims 1, 4-12, 14, 15, 17, 20-30, 32-44, 47-50, and 52-54 are amended. Applicant respectfully submits that all pending claims (i.e., 1, 4-12, 14, 15, 17, 20-

30, 32-44, 47-50, 52-63) are in condition for allowance. If, in the Examiner's opinion, a telephonic interview would expedite the favorable prosecution of the present application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues, and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,

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MARKED-UP COPY OF ALL CLAIM AMENDMENTS

1. (Four-time Amended) ~~An~~ method of generating light inside a mammalian body for a medical purpose, ~~interventional device,~~ comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the interventional device including a sonoluminescent light module ~~for placement inside a body, the module comprising~~; and generating a sonoluminescent light inside the body.

~~(i) an acoustic transducer comprising a piezoelectric element and a wave matching layer for generating sound waves;~~

~~(ii) a housing enclosing an acoustic conducting medium, the acoustic conducting medium positioned in a pathway of the sound waves generated by the acoustic transducer, at least a portion of the housing being optically transparent; and~~

~~(iii) a lens for focusing the sound waves generated by the acoustic transducer in the acoustic conducting medium, whereby sonoluminescent light is generated.~~

4. (Twice Amended) The method ~~interventional device~~ of claim 1, wherein the light module comprises an acoustic transducer and an acoustic conducting medium, the method further comprising the steps of:

providing electric pulses to the acoustic transducer, thereby causing the transducer to generate sound waves; and

focusing the generated sound waves in the acoustic conducting medium, thereby generating light. ~~lens is disposed between the acoustic transducer and the acoustic conducting medium.~~

5. (Twice Amended) The ~~interventional device~~ method of claim ~~1~~ 4 wherein the acoustic conducting medium is disposed in a housing that is at least partly transparent to the light. ~~a distal end of the housing is shaped to provide reflection and concentration of sound waves in the acoustic conducting medium.~~

6. (Twice Amended) The ~~interventional device~~ method of claim ~~1~~ 4 wherein the acoustic conducting medium is disposed in a housing having a distal end, ~~a~~the distal end ~~of the housing is~~being open ~~to~~ for focusing sound waves in the tissue to generate the light.

7. (Twice Amended) The ~~interventional device~~ method of claim ~~1~~ 4, further comprising using water as at least a part of ~~wherein~~ the acoustic conducting medium ~~comprises water~~.

8. (Twice Amended) The ~~interventional device~~ method of claim ~~1~~ 4 wherein ~~the acoustic conducting medium comprises~~ a solid substance or target on which sonoluminescent effect can be observed is used as at least a part of the acoustic conducting medium.

9. (Amended) The ~~interventional device~~ method of claim ~~3~~ 4 wherein the acoustic transducer comprises a piezoelectric element and a wave matching layer for generating sound waves. ~~the piezoelectric material comprises lead zirconate titanate.~~

10. (Amended) The ~~interventional device~~ method of claim 1 wherein the sonoluminescent light module is disposed near ~~a~~ the distal ~~end~~ portion of the interventional device.

11. (Amended) The ~~interventional device~~method of claim 4, ~~10~~ wherein the step of providing electric pulses ~~further~~ comprises ~~ing~~ using a pulse generator in communication

with the sonoluminescent light module through an electrical conduits positioned inside the interventional device.

12. (Twice Amended) The ~~interventional device~~ method of claim ~~1~~ 5 wherein ~~the sonoluminescent light module is disposed near a distal end of the interventional device and the distal end of~~ the interventional device has a distal end that serves ~~performs~~ as the housing.

14. (Twice Amended) The ~~interventional device~~ method of claim 1 further comprising the step of ~~wherein a~~ adjusting the position of the light module inside the interventional device ~~is adjustable~~.

15. (Amended) The ~~interventional device~~ method of claim ~~10~~ 1, further comprising the step of filtering at least a portion of the generated light such that ~~wherein the interventional device has an optically transparent window comprising a material selected to transmit~~ only light ~~having~~ within a predetermined range of wavelengths is transmitted to a target.

17. (Twice Amended) The ~~interventional device~~ method of claim 1 wherein the sonoluminescent light ~~module is capable of generating~~ generated comprises x-ray radiation.

20. (Thrice Amended) A~~n~~ method of generating light inside a mammalian body, ~~interventional device,~~ comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising an arc lamp ~~for placement inside a body~~;

electrically connecting the arc lamp through a proximal end of the interventional device ~~connected~~ to an energy source; and

causing the arc lamp to generate an arc inside the body.

~~a middle elongated portion that is at least partly inserted inside the body, comprising a signal conduit that electronically connects the energy source and the arc lamp~~.

21. (Amended) The ~~interventional device~~method of claim 20, wherein the arc lamp comprises~~:~~

———a housing, and

———a first and a second electrode positioned inside the housing,

the step of generating an arc comprising ~~and in relation to each other to~~ striking~~e~~ an arc between the first and second electrodes.

22. (Amended) The ~~interventional device~~ method of claim 21 wherein the first electrode has a hemispheric~~e~~ shape and is coated with a metal.

23. (Amended) The ~~interventional device~~ method of claim 21 wherein the second electrode is formed —on an inner surface of the housing by flash metallization.

24. (Amended) The ~~interventional device~~ method of claim 21 wherein the first and the second ———electrode~~s~~ are sealed inside the housing with a sintered metal and a seal material that yields under high pressure.

25. (Amended) The ~~interventional device~~ method of claim 24 wherein the sintered metal comprises copper wool.

26. (Twice Amended) The ~~interventional device~~ method of claim 21 wherein a distal end of the housing is dome shaped, the method further comprising the step of ~~for~~ collecting and redirecting light generated by the arc lamp through the distal end of the housing.

27. (Amended) The ~~interventional device~~ method of claim 21 wherein a material for the housing comprises quartz.

28. (Amended) The ~~interventional device~~ method of claim 21, wherein the interventional devcie further comprises~~ing~~ a feedback system and a light guide disposed adjacent a housing wall, the method further comprising the step of ~~for~~ supplying a light output from the arc generated to the~~a~~ feedback system.

29. (Twice Amended) The ~~interventional device~~ method of claim 20 wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

30. (Amended) The ~~interventional device~~ method of claim 21 wherein ~~the~~ a distal end of the interventional device performs as the housing.

32. (Thrice Amended) A~~n interventional device~~ method of generating light inside a mammalian body, comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising a fluorescent light source ~~for placement inside a body~~;

electrically connecting the fluorescent light source through a proximal end of the interventional device ~~connected~~ to an energy source; and

causing the light source to generate a fluorescent light inside the body.

~~a middle elongated portion that is at least partly inserted inside the body, comprising a signal conduit that electronically connects the energy source and the fluorescent light source~~.

33. (Amended) The ~~interventional device~~ method of claim 32 wherein the fluorescent light source comprises a flash tube coated with a phosphorescent or a fluorescing material.

34. (Amended) The ~~interventional device~~ method of claim 32 wherein the fluorescent light source comprises an equipotential flash tube shaped to discharge uniformly.

35. (Amended) The ~~interventional device~~ method of claim 34 wherein the fluorescent light source further comprises a dielectric material surrounding the flash tube and a pair of electrodes disposed at opposite sides of the dielectric material.

36. (Twice Amended) The ~~interventional device~~ method of claim 32 wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

37. (Twice Amended) The ~~interventional device~~ method of claim 32, wherein the interventional device further comprise~~ing~~ a balloon catheter having a polymeric stent placed on an external surface of a balloon portion.

38. (Amended) The ~~interventional device~~ method of claim 37, further comprising the step of~~wherein~~ hardening the polymeric stent ~~becomes hardened when~~ by ~~exposed to~~ irradiating~~on~~ the stent with the light generated by the fluorescent light source.

39. (Amended) The ~~interventional device~~ method of claim 38 wherein the polymeric stent comprises a ultraviolet curable epoxy or an adhesive material.

40. (Amended) The ~~interventional device~~ method of claim 32 wherein the fluorescent light source comprises:

a Gunn-effect diode for generating radio-frequency energy;

a dielectric resonator disposed adjacent the diode; and

a gas tube comprising a gaseous substance that fluoresce when subjected to RF energy.

41. (Thrice Amended) A~~n~~ method of generating light inside a mammalian body ~~interventional device~~, comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising a spark gap module ~~for placement inside a body~~;

electrically connecting the spark gap module through a proximal end of the interventional device ~~connected~~ to an energy source; and

causing the spark gap module to generate a spark inside the body.

~~a middle elongated portion that is at least partly inserted inside the body, comprising a signal conduit that electronically connects the energy source and the spark gap module.~~

42. (Amended) The ~~interventional device~~ method of claim 41 wherein the spark gap module comprises two electrodes, the step of generating a spark comprising positioning~~ed~~ the two electrodes in relation to each other for generating a spark across a gap between the two electrodes.

43. (Amended) The ~~interventional device~~ method of claim 42, further comprising the step of ~~wherein~~ sealing the two electrodes ~~are sealed~~ in a transparent housing.

44. (Amended) The ~~interventional device~~ method of claim 43 further comprising the step of disposing a filter ~~disposed~~ at a distal end of the housing for enhancing a desired light output.

47. (Thrice Amended) A~~n interventional device~~ method of generating light inside a mammalian body, comprising the steps of:

placing at least a distal portion of an interventional device light inside a mammalian body, the distal device portion comprising an incandescent lamp; ~~for placement inside a body and for generating short duration high intensity light waves;~~

electrically connecting the incandescent lamp through a proximal end of the interventional device ~~connected~~ to an energy source; and

causing the incandescent lamp to generate short duration high intensity light waves.

~~a middle elongated portion that is at least partly inserted inside the body, comprising a signal conduit that electronically connects the energy source and the incandescent lamp.~~

48. (Amended) The ~~interventional device~~ method of claim 47 wherein the short duration comprises duration of less than 100 milliseconds.

49. (Amended) The ~~interventional device~~ method of claim 47 wherein the incandescent lamp comprises a housing, a pair of electrodes placed inside the housing and a filament connecting the pair of electrodes.

50. (Amended) The ~~interventional device~~ method of claim 49 wherein the filament comprises an oxidizing filament and the housing is filled with a selected gas for generating light having a pre-determined color.

52. (Amended) The ~~interventional device~~ method of claim 41, wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

53. (Amended) The ~~interventional device~~ method of claim 47, wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

54. (Amended) An interventional device comprising:

a thin, elongated member configured for insertion into a mammalian body, the member comprising a distal tip; and

a sonoluminescent light module ~~associated with~~ disposed within the elongated member such that the position of the light module relative to the member is adjustable through a connection to a proximal region of the interventional device, the sonoluminescent light module being configured to acoustically generate a light inside the body, following insertion of at least the tip into the body.

60. (New) The method of claim 4, wherein the light module further comprises a lens, the step of focusing the generated sound waves comprising placing the lens in a pathway of the generated sound waves.

61. (New) The method of claim 60, wherein the lens is placed between the acoustic transducer and the acoustic conducting medium.

62. (New) The method of claim 4, wherein the light module comprises a housing that encloses the acoustic conducting medium, the step of focusing the generated sound waves comprising reflecting the generated sound wave off the housing.

63. (New) The method of claim 9, wherein the piezolelectric material comprises lead zirconate-titanate.